CLAIMS

1. An information recording method of recording information by irradiating a laser beam onto a multilayer optical recording medium, comprising :

a trial writing process of performing trial writing of data on a trial writing area of the optical recording medium with recording power of the laser beam being gradually changed, and obtaining optimal recording power based on a reproduced signal of the data that are trial-written in advance of a recording operation start; and

a recording power adjustment process of adjusting the optimal recording power according to a recording-start position, and starting the recording operation using the adjusted optimal recording power,.

2. The information recording method as claimed in claim 1, wherein

the trial writing area on which the trial writing process is performed is located at an inner circumference of a target recording layer of the optical recording medium, and

the recording power adjustment process

adjusts the optimal recording power according to the recording-start position when recording on the target recording layer that should be recorded on from an outer circumference to the inner circumference.

3. The information recording method as claimed in claim 2, further comprising:

a running trial writing process of obtaining the optimal recording power based on the reproduced signal of the data that are trial-written during the recording operation, wherein

the recording power adjustment process adjusts the recording power after starting the recording operation to the optimal recording power obtained by the running trial writing process.

4. The information recording method as claimed in claim 2, wherein the recording power adjustment process adjusts the adjustment amount according to the recording-start position.

5. The information recording method as claimed in claim 4, wherein the recording power adjustment process adjusts the adjustment amount

using a linear approximation with reference to a radial position of the recording-start position.

6. The information recording method as claimed in claim 4, wherein the recording power adjustment process is carried out only when the recording-start position is located at a radial position greater than a predetermined radial position of the optical recording medium.

7. The information recording method as claimed in claim 1, wherein the recording power adjustment process adjusts the adjustment amount of the recording power according to a kind of the optical recording medium.

8. The information recording method as claimed in claim 1, wherein the recording power adjustment process adjusts the adjustment amount of the recording power with reference to an adjustment amount of the recording power beforehand stored in a non-volatile memory of an information recording apparatus.

9. The information recording method as

claimed in claim 1, wherein

the trial writing process performs trial writing on a trial writing area located at an inner circumference and a trial writing area located at an outer circumference of a target recording layer of the optical recording medium, and obtains optimal recording power of each trial writing area, and

the recording power adjustment process adjusts the optimal recording power obtained from the trial writing area of the inner circumference with reference to the optimal recording power obtained from the trial writing area of the outer circumference according to a recording-start position when recording on the target recording layer that should be recorded on from the outer circumference to the inner circumference.

10. The information recording method as claimed in claim 9, wherein the recording power adjustment process carries out linear approximation of the optimal recording power obtained from the trial writing area of the inner circumference and the optimal recording power obtained from the trial writing area of the outer circumference, and obtains the adjustment amount according to the radial

position of the recording-start position of the optical-recording medium.

11. The information recording method as claimed in claim 9, wherein the recording power adjustment process is carried out only when the recording-start position is located in an area with a radial position greater than a predetermined radial position of the optical-recording medium, and the optimal recording power is adjusted using a difference between the optimal recording power obtained from the trial writing area of the inner circumference and the optimal recording power obtained from the trial writing area of the outer circumference.

12. The information recording method as claimed in claim 9, wherein:

the trial writing process is performed only on the trial writing area located in the outer circumference of the target recording layer of the optical recording medium, and obtains the optimal recording power, when the recording-start position is at the outermost circumference position; and

the recording power adjustment process

starts the recording operation using the optimal recording power obtained at the trial writing process .

13. The information recording method as claimed in claim 1, wherein:

the multilayer optical recording medium is an optical recording medium that has two or more recording layers that are recorded on by an opposite track path (OTP) method based on the DVD+R specifications; and

the trial writing process and the recording power adjustment process are carried out when a target recording layer should be recorded on from the outer circumference to the inner circumference of the optical recording medium.

14. An information recording apparatus, wherein information is recorded by irradiating a laser beam onto a multilayer optical recording medium, comprising:

a trial writing unit for performing trial writing of data on a trial writing area of the optical recording medium with recording power of the laser beam being gradually changed, and obtaining

optimal recording power based on a reproduced signal of the data that are trial-written in advance of a recording operation start; and

a recording power adjustment unit for adjusting the optimal recording power according to a recording-start position, and starting the recording operation using the adjusted optimal recording power..

15. The information recording apparatus as claimed in claim 14, wherein

the trial writing area on which the trial writing unit performs trial writing is located at an inner circumference of a target recording layer of the optical recording medium, and

the recording power adjustment unit adjusts the optimal recording power according to the recording-start position when recording on the target recording layer that should be recorded on from an outer circumference to the inner circumference.

16. The information recording apparatus as claimed in claim 15, further comprising:

a running trial writing unit for obtaining the optimal recording power based on the reproduced

signal of the data that are trial-written during the recording operation, wherein

the recording power adjustment unit adjusts the recording power after starting the recording operation to the optimal recording power obtained by the running trial writing unit.

17. The information recording apparatus as claimed in claim 15, wherein the recording power adjustment unit adjusts the adjustment amount according to the recording-start position.

18. The information recording apparatus as claimed in claim 17, wherein the recording power adjustment unit adjusts the adjustment amount using a linear approximation with reference to a radial position of the recording-start position.

19. The information recording apparatus as claimed in claim 17, wherein the recording power adjustment unit adjusts the recording power only when the recording-start position is located at a radial position greater than a predetermined radial position of the optical recording medium.

20. The information recording apparatus as claimed in claim 14, wherein the recording power adjustment unit adjusts the adjustment amount of the recording power according to a kind of the optical recording medium.

21. The information recording apparatus as claimed in claim 14, wherein the recording power adjustment unit adjusts the adjustment amount of the recording power with reference to an adjustment amount of the recording power beforehand stored in a non-volatile memory of the information recording apparatus .

22. The information recording apparatus as claimed in claim 14, wherein

the trial writing unit performs trial writing on a trial writing area located at an inner circumference and a trial writing area located at an outer circumference of a target recording layer of the optical recording medium, and obtains optimal recording power of each trial writing area, and

the recording power adjustment unit adjusts the optimal recording power obtained from the trial writing area of the inner circumference

with reference to the optimal recording power obtained from the trial writing area of the outer circumference according to a recording-start position when recording on the target recording layer that should be recorded on from the outer circumference to the inner circumference.

23. The information recording apparatus as claimed in claim 22, wherein the recording power adjustment unit carries out linear approximation of the optimal recording power obtained from the trial writing area of the inner circumference and the optimal recording power obtained from the trial writing area of the outer circumference, and obtains the adjustment amount according to the radial position of the recording-start position of the optical-recording medium.

24. The information recording apparatus as claimed in claim 22, wherein the recording power adjustment unit carries out recording power adjustment only when the recording-start position is located in an area with a radial position greater than a predetermined radial position of the optical-recording medium, and the optimal recording power is

adjusted using a difference between the optimal recording power obtained from the trial writing area of the inner circumference and the optimal recording power obtained from the trial writing area of the outer circumference.

25. The information recording apparatus as claimed in claim 22, wherein:

the trial writing unit performs trial writing only on the trial writing area located in the outer circumference of the target recording layer of the optical recording medium, and obtains the optimal recording power, when the recording-start position is at the outermost circumference position; and

the recording power adjustment unit starts the recording operation using the optimal recording power obtained by the trial writing unit.

26. The information recording apparatus as claimed in claim 14, wherein:

the multilayer optical recording medium is an optical recording medium that has two or more recording layers that are recorded on by an opposite track path (OTP) method based on the DVD+R

specifications; and

the trial writing unit and the recording power adjustment unit carry out respective functions when a target recording layer should be recorded on from the outer circumference to the inner circumference of the optical recording medium.